

115TH CONGRESS
1ST SESSION

H. R. 3033

To secure the technological edge of the United States in civil and military aviation.

IN THE HOUSE OF REPRESENTATIVES

JUNE 23, 2017

Mr. KNIGHT (for himself, Ms. KAPTUR, Mr. SCOTT of Virginia, Mr. RYAN of Ohio, Mr. JOYCE of Ohio, and Mr. STIVERS) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

A BILL

To secure the technological edge of the United States in civil and military aviation.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Aeronautics Innovation
5 Act”.

6 **SEC. 2. AUTHORIZATION OF APPROPRIATIONS.**

7 (a) FISCAL YEAR 2018.—There are authorized to be
8 appropriated to NASA Aeronautics Research Mission Di-
9 rectorate for fiscal year 2018, \$790,000,000, as follows:

1 (1) For Airspace Operations and Safety Pro-
2 gram, \$159,000,000.

3 (2) For Advanced Air Vehicles Program,
4 \$280,000,000.

5 (3) For Integrated Aviation Systems Program,
6 \$251,000,000.

7 (4) For Transformative Aero Concepts Pro-
8 gram, \$100,000,000.

9 (b) FISCAL YEAR 2019.—There are authorized to be
10 appropriated to NASA Aeronautics Research Mission Di-
11 rectorate for fiscal year 2019, \$880,000,000, as follows:

12 (1) For Airspace Operations and Safety Pro-
13 gram, \$165,000,000.

14 (2) For Advanced Air Vehicles Program,
15 \$303,000,000.

16 (3) For Integrated Aviation Systems Program,
17 \$300,000,000.

18 (4) For Transformative Aero Concepts Pro-
19 gram, \$112,000,000.

20 (c) FISCAL YEAR 2020.—There are authorized to be
21 appropriated to NASA Aeronautics Research Mission Di-
22 rectorate for fiscal year 2020, \$924,000,000, as follows:

23 (1) For Airspace Operations and Safety Pro-
24 gram, \$170,000,000.

1 (2) For Advanced Air Vehicles Program,
2 \$290,000,000.

3 (3) For Integrated Aviation Systems Program,
4 \$350,000,000.

5 (4) For Transformative Aero Concepts Pro-
6 gram, \$114,000,000.

7 (d) FISCAL YEAR 2021.—There are authorized to be
8 appropriated to NASA Aeronautics Research Mission Di-
9 rectorate for fiscal year 2021, \$946,000,000, as follows:

10 (1) For Airspace Operations and Safety Pro-
11 gram, \$175,000,000.

12 (2) For Advanced Air Vehicles Program,
13 \$295,000,000.

14 (3) For Integrated Aviation Systems Program,
15 \$360,000,000.

16 (4) For Transformative Aero Concepts Pro-
17 gram, \$116,000,000.

18 (e) FISCAL YEAR 2022.—There are authorized to be
19 appropriated to NASA Aeronautics Research Mission Di-
20 rectorate for fiscal year 2022, \$980,000,000, as follows:

21 (1) For Airspace Operations and Safety Pro-
22 gram, \$180,000,000.

23 (2) For Advanced Air Vehicles Program,
24 \$300,000,000.

1 (3) For Integrated Aviation Systems Program,
2 \$382,000,000.

3 (4) For Transformative Aero Concepts Pro-
4 gram, \$118,000,000.

5 **SEC. 3. FINDINGS.**

6 Congress finds the following:

7 (1) The U.S. aircraft manufacturing industry
8 produced \$342,682,000,000 in economic activity
9 from manufacture of aircraft and parts sales and
10 supported 547,900 direct jobs in 2016.

11 (2) Growth in the civil aircraft market is pro-
12 jected to offer 8 to 10 trillion dollars in new aircraft
13 sales, parts, and services over the next 17 years.
14 International governments are boosting their re-
15 search and development investments to give their do-
16 mestic industries competitive advantages in the air-
17 craft market.

18 (3) In 2015, the Department of Defense spent
19 \$10,600,000,000 on jet fuel and \$441,600,000 on
20 jet fuel transportation to support the warfighter.
21 NASA's research into ultra-efficient air transport
22 are important to the military's efforts to reduce fuel
23 costs, logistics pressures, and the level of human
24 risk involved with providing worldwide energy solu-
25 tions.

1 (4) NASA’s aeronautics research and collabo-
2 rative ventures yield innovations that can eventually
3 be utilized in the aviation sector, opening up entirely
4 new markets, enabling the United States aviation in-
5 dustry to grow and maintain global competitiveness,
6 providing high-quality engineering and manufac-
7 turing jobs, and benefitting the quality of life for our
8 citizens.

9 (5) Continued progress in the science and tech-
10 nology of aeronautics is crucial to the United States
11 sustained economic success and the protection of the
12 United States security interests at home and around
13 the world, as acknowledged in the 2006 National
14 Aeronautics Research and Development Policy. To
15 ensure Federal efforts remain on a disciplined path
16 to meet national objectives, the Director of the Of-
17 fice of Science and Technology Policy is responsible
18 for the implementation and biennial review of the
19 Nation’s aeronautics research and development plan.

20 (6) All of NASA’s other directorates and capa-
21 bilities, including those in space, depend on research
22 and technology that originated and is maintained in
23 NASA’s Aeronautics Centers.

24 (7) Aeronautics plays a central role in our na-
25 tional security strategy, and our technological advan-

1 tage over potential adversaries must be maintained
2 with sustained and focused research and develop-
3 ment.

4 (8) NASA Aeronautics Research Mission Direc-
5 torate's 6 strategic thrusts (safe, efficient growth in
6 global operations; innovation in supersonic aircraft;
7 ultra-efficient vehicles; transition to alternative pro-
8 pulsion and energy; real-time, system-wide safety as-
9 surance; and assured autonomy for aviation trans-
10 formation) are effective and necessary research
11 areas for the development of next generation aero-
12 nautics technology that will preserve the United
13 States lead in the global aviation industry.

14 (9) Aeronautics research is focused on funda-
15 mental capabilities that have the potential to open
16 entirely new industries, including low-cost electric
17 propulsion, advanced composite material manufac-
18 turing, simplified air vehicle operation, and in-
19 creased vertical takeoff and landing, that will allow
20 for safer and more efficient aviation products and
21 support mobility and economic growth.

22 (10) To meet the challenges of the 21st cen-
23 tury, the United States needs to support NASA's
24 Aeronautics Research Program at funding levels
25 that are commensurate with it's past, present, and

1 future contributions to the nation’s economic com-
2 petitiveness and national security.

3 **SEC. 4. DEFINITIONS.**

4 In this Act:

5 (1) ADMINISTRATOR.—The term “Adminis-
6 trator” means the Administrator of NASA.

7 (2) AERONAUTICS STRATEGIC IMPLEMENTA-
8 TION PLAN.—The term “Aeronautics Strategic Im-
9 plementation Plan” means the Aeronautics Strategic
10 Implementation Plan issued by the NASA Aero-
11 nautics Research Mission Directorate.

12 (3) AIR TRAFFIC MANAGEMENT SYSTEM.—The
13 term “air traffic management system” means the
14 procedures, technology, and human resources to
15 guide aircraft through the sky and on the ground
16 and to manage low- and high-altitude airspace use.

17 (4) NASA.—The term “NASA” means the Na-
18 tional Aeronautics and Space Administration.

19 (5) UNMANNED AIRCRAFT SYSTEM; UNMANNED
20 AIRCRAFT.—The terms “unmanned aircraft system”
21 and “unmanned aircraft” have the definitions given
22 those terms in section 331 of the FAA Moderniza-
23 tion and Reform Act of 2012 (49 U.S.C. 40101
24 note).

1 **SEC. 5. EXPERIMENTAL PLANE PROGRAMS.**

2 (a) SENSE OF CONGRESS.—It is the sense of Con-
3 gress that—

4 (1) developing high-risk, precompetitive aero-
5 space technologies for which there is not yet a profit
6 rationale is a fundamental NASA role;

7 (2) near-full-scale to full-scale vehicle flight test
8 experimentation and validation are necessary for—

9 (A) transitioning new technologies and ma-
10 terials, as well as their associated manufac-
11 turing processes, for general aviation, commer-
12 cial, and military aeronautics use; and

13 (B) capturing the full breadth of benefits
14 from the Aeronautics Research Mission Direc-
15 torate's investments in priority programs called
16 for in—

17 (i) the National Aeronautics Research
18 and Development Plan issued by the Na-
19 tional Science and Technology Council in
20 February 2010;

21 (ii) the NASA 2014 Strategic Plan;

22 (iii) the Aeronautics Strategic Imple-
23 mentation Plan; and

24 (iv) any updates to the programs
25 called for in the plans described in clause
26 (i) through (iii); and

1 (3) a level of funding that adequately supports
2 full-scale experimentation and related infrastructure
3 must be assured over a sustained period of time to
4 restore NASA's capacity to see legacy priority pro-
5 grams through to completion and achieve national
6 economic and security objectives.

7 (b) NATIONAL POLICY.—It is the policy of the United
8 States to maintain world leadership in military and civil-
9 ian aeronautical science and technology, global air power
10 projection, and industrial leadership. To this end, one of
11 the fundamental objectives of NASA aeronautics research
12 is the steady progression and expansion of high-speed
13 flight research and capabilities, including the science and
14 technology of critical underlying disciplines and com-
15 petencies, chief among which are computational-based an-
16 alytical and predictive tools and methodologies, aero-
17 thermodynamics, high-speed flight propulsion, high-tem-
18 perature structures and materials, and flight controls.

19 (c) ESTABLISHMENT OF PROGRAMS OR PROJECTS.—
20 The Administrator shall establish the following programs
21 or projects:

22 (1) A low-boom supersonic aircraft program or
23 project that will—

24 (A) demonstrate supersonic aircraft de-
25 signs and technologies that reduce sonic boom

1 noise to levels that encourage the repeal of do-
2 mestic and international bans on supersonic
3 flight overland; and

4 (B) gather the data needed to support in-
5 formed decisions of the Federal Aviation Ad-
6 ministration regarding overland supersonic
7 flight.

8 (2) A subsonic flight program, consisting of
9 multiple large-scale X-Plane demonstrators devel-
10 oped sequentially or in parallel, each based on a set
11 of new configuration concepts or technologies deter-
12 mined by the Administrator, to—

13 (A) demonstrate aircraft vehicle and pro-
14 pulsion concepts and technologies and related
15 advances in alternative propulsion and energy;
16 and

17 (B) enable significant increases in energy
18 efficiency and lower life cycle emissions in the
19 aviation system while achieving a step change in
20 noise emissions.

21 (d) PROGRAM ELEMENTS.—For each of the pro-
22 grams established under subsection (c), the Administrator
23 shall—

24 (1) include development of experimental aircraft
25 (X-Plane), experimental systems (X-System), mul-

1 tiple technologies, and all necessary supporting flight
2 assets;

3 (2) pursue a robust technology maturation and
4 flight validation program that addresses challenges
5 in technology development and maturation;

6 (3) improve necessary facilities, flight testing
7 capabilities, and computational tools to support the
8 program;

9 (4) only award primary contracts for design,
10 procurement, and manufacture to United States
11 companies, consistent with international obligations
12 and commitments;

13 (5) coordinate research and flight demonstra-
14 tion activities with other Federal agencies, as appro-
15 priate, and the United States aviation manufac-
16 turing community; and

17 (6) ensure that the program remains aligned
18 with the Aeronautics Strategic Implementation Plan,
19 and any updates to the Plan.

20 (e) ON-DEMAND AVIATION.—Congress finds the fol-
21 lowing:

22 (1) Fuller utilization of high-speed air transpor-
23 tation, small airports, helipads, vertical flight infra-
24 structure, and other infrastructure can alleviate

1 transportation congestion and support economic
2 growth within cities.

3 (2) NASA should continue to develop and test
4 air vehicles, different propulsion systems, network
5 systems, unmanned aircraft system traffic manage-
6 ment systems, and technology that can be utilized in
7 on-demand air transportation.

8 (3) NASA should actively support the research
9 around the use of airspace for on-demand aviation.

10 (4) This work should leverage NASA’s ongoing
11 efforts in developing advanced technologies for large,
12 high-volume commercial aircraft applications and
13 airspace operations. The Administrator should as-
14 sess which air traffic concepts perform most effi-
15 ciently, taking into consideration factors such as ex-
16 isting city infrastructure, small airports, and current
17 airspace operations.

18 (f) DEFINITION OF UNITED STATES COMPANY.—In
19 this section, the term “United States company” means a
20 private sector entity—

21 (1) organized under the laws of the United
22 States; and

23 (2) that has an existing facility or facilities lo-
24 cated in the continental United States, including in-
25 frastructure and staffing, capable of meeting the ob-

1 jectives of the program for which the company seeks
2 to participate, as determined by the Administrator.

3 **SEC. 6. UNMANNED AIRCRAFT SYSTEMS.**

4 (a) SENSE OF CONGRESS.—It is the sense of Con-
5 gress that—

6 (1) to ensure United States competitiveness on
7 the global stage, the Federal Government must work
8 with the private sector to safely integrate the in-
9 creasing number of commercial applications for un-
10 manned aircraft systems; and

11 (2) the sustained, efficient growth of the United
12 States transportation system will require harnessing
13 the safety and efficiency benefits of automated sys-
14 tems to relieve pressure on infrastructure and traffic
15 management.

16 (b) POLICY.—It is the policy of the United States
17 Government to be an active partner with the private sector
18 in the development of technologies, capabilities, and oper-
19 ating procedures for the safe, efficient integration of un-
20 manned aircraft systems into the national airspace, while
21 ensuring current and future air traffic management sys-
22 tems are able to manage unmanned aircraft systems.

23 (c) UNMANNED AIRCRAFT SYSTEMS OPERATION
24 PROGRAM.—To advance the national policy described in
25 subsection (b), the Administrator shall—

1 (1) research, develop, and test capabilities and
2 concepts, including unmanned aircraft systems com-
3 munications and spectrum-related resources, for in-
4 tegrating unmanned aircraft systems into the na-
5 tional airspace system;

6 (2) leverage NASA's partnership with industry
7 focused on the advancement of technologies for fu-
8 ture air traffic management systems for unmanned
9 aircraft for low- and high-altitude operations;

10 (3) leverage industry's advancement of tech-
11 nologies for unmanned aircraft to inform regulatory
12 and standards requirements for various sizes of civil
13 unmanned aircraft systems;

14 (4) consider the needs of United States indus-
15 try, especially as operations transition to more auto-
16 mated systems; and

17 (5) continue to align its research and testing
18 portfolio to inform unmanned aircraft system inte-
19 gration consistent with national safety and national
20 security objectives.

21 (d) COORDINATION WITH THE FEDERAL AVIATION
22 ADMINISTRATION.—It is the sense of Congress that—

23 (1) NASA should continue to coordinate with
24 the Federal Aviation Administration on research on
25 air traffic management systems for unmanned air-

1 craft systems and assist in the establishment of the
2 pilot program required under section 2208 of the
3 FAA Extension, Safety, and Security Act of 2016
4 (49 U.S.C. 40101 note) and the subsequent imple-
5 mentation of unmanned aircraft system traffic man-
6 agement systems; and

7 (2) unmanned aircraft system integration and
8 unmanned traffic management research should con-
9 tinue to leverage the resources available through the
10 unmanned aircraft system test ranges designated by
11 the Federal Aviation Administration under section
12 332 of the FAA Modernization and Reform Act of
13 2012 (Public Law 112–95; 49 U.S.C. 40101 note).

14 **SEC. 7. 21ST CENTURY AERONAUTICS RESEARCH CAPABILI-**
15 **TIES INITIATIVE.**

16 (a) ESTABLISHMENT.—The Administrator shall es-
17 tablish a 21st Century Aeronautics Capabilities Initiative,
18 within the Construction and Environmental Compliance
19 and Restoration Account, to ensure that NASA possesses
20 the infrastructure capabilities and computational tools
21 necessary to conduct proposed flight demonstration
22 projects across the range of NASA aeronautics interests.
23 As part of such Initiative, the Administrator shall carry
24 out the following activities:

1 (1) Any investments necessary to upgrade and
2 create facilities for civil and national security aero-
3 nautics research to support advancements in long-
4 term foundational science and technology, advanced
5 aircraft systems, air traffic management systems,
6 fuel efficiency and electric propulsion technologies,
7 system-wide safety assurance, autonomous aviation,
8 and supersonic and hypersonic aircraft design and
9 development.

10 (2) Any measures supporting flight testing ac-
11 tivities, to include continuous refinement and devel-
12 opment of free-flight test techniques and methodolo-
13 gies, upgrades and improvements to real-time track-
14 ing and data acquisition, and any other measures re-
15 lated to aeronautics research support and mod-
16 ernization as the Administrator may consider appro-
17 priate to carry out the scientific study of the prob-
18 lems of flight, with a view to their practical solution.

19 (b) AUTHORIZATION OF APPROPRIATIONS.—For the
20 purpose of carrying out this section, there are authorized
21 to be appropriated to NASA \$100,000,000 for each of fis-
22 cal years 2018 through 2022, to be derived from amounts
23 otherwise authorized to be appropriated to NASA.

24 (c) REPORT.—

1 (1) REPORT REQUIRED.—Not later than 120
2 days after the date of enactment of this Act, the Ad-
3 ministrators shall transmit to Congress a report con-
4 taining a 5-year plan for the implementation of the
5 21st Century Aeronautics Research Capabilities Ini-
6 tiative.

7 (2) ELEMENTS.—The report required by this
8 subsection shall include—

9 (A) a description of proposed projects;

10 (B) a description of how the projects align
11 with the Aeronautics Strategic Implementation
12 Plan or the roadmap developed by the joint
13 technology office on hypersonics under section
14 218(d) of the John Warner National Defense
15 Authorization Act for Fiscal Year 2007, and
16 any updates to such Plan or roadmap; and

17 (C) a timetable for carrying out activities
18 and initiatives authorized under this section.

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